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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/026,017	12/21/2001	Brian S. Huffman	1749	8387

7590 07/01/2003

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EXAMINER	
SERGENT, RABON A	

ART UNIT	PAPER NUMBER
1711	5

DATE MAILED: 07/01/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/026,017	HUFFMAN ET AL.	
	Examiner	Art Unit	
	Rabon Sergent	1711	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-15* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Pri rity under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

1. Claims 1-5 and 12-15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Firstly, within claim 1, it is unclear how a diisocyanate trimer is to be incorporated as R into Formula 1. It is not clear how the trimer represents a linkage or residue. Furthermore, the species of the Markush group defining R_1 should not be referred to in the alternative, since a group has been specified. Lastly, within the definition of R, it is unclear what species C_{1-17} modifies. Does it pertain only to the alkyl species?

Secondly, the language denoted by "such as" renders the claims indefinite, because it is unclear if or to what extent the narrow language is to further limit the broad language.

Thirdly, the language, "and the like", renders the claims indefinite, because it is unclear what moieties or groups are encompassed by the language. How different may a group be and still be "like" the specified groups?

Fourthly, within claim 2, the use of "may be" renders the claim indefinite, because it is unclear if or to what extent the language denoted by "may be" is optional. Furthermore, the period within line 3 is improper. Also, it is unclear how to reconcile the two definitions of R. Lastly, it is unclear how R may be "unsubstituted" with the specified groups.

Fifthly, within claim 3, it is unclear how the language of lines 2 and 3 defining R is modified by the Markush group of species appearing within the remaining part of the claim.

Furthermore, it is confusing to have "X" and "Y" have different definitions. Also, the definition of "n" within p-MDI has not been clearly defined. Lastly, the last structure is confusing in that it is unclear what is represented by diisophorone; "n" is not present within the structure; "Y" can only be one, according to the structure; the value of "x" is confusing, because it is unclear if it is to further define the other values of "x"; the means of representing the adipate repeating units is confusing; "isocyanate" has not been spelled correctly; and the structure has upper case X and Y, whereas the definitions have lower case x and y.

Sixthly, within claim 4, the use of the tradename, Desmodur W" is improper. Furthermore, it is unclear what is represented by "isophorone" in line 6. Additionally, it is not clear that any monoisocyanates are a part of the Markush group. Lastly, the Markush group is limited tom isocyanates and diisocyanates; however, a triisocyanate has been specified as a member.

Lastly, within the last line of claim 14, it is unclear what functionality is represented by "olefinic functionality". Are applicants stating that the compound is unsaturated?

2. Claim 8 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Within claim 7, applicants have referred to an isocyanate, diisocyanate, or polyisocyanate; therefore it is questioned if the reference to only diisocyanate within claim 8 is correct.

3. Claims 7-9 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Applicants have failed to define "isofunctional material".

4. Claims 1-5 and 12-15 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Applicants have specified that R_1 may be "another group with reactive functionality"; however, applicants have failed to provide adequate enablement with respect to what these groups are or how they are selected.

5. Claims 1-5 and 12-15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Within line 9 of claim 1 (each structure being one line), the -NH- link is confusing, since the letters are merged.

Within claim 3, the suffix numbers of the structures are not easily read, since they have merged with the formula symbols.

6. Claims 1-5 and 12-15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Applicants' claim proviso of claim 1 is unclear. It is unclear if applicants are excluding compounds derived from components other than p-phenylene diisocyanate that would yield the same compound as p-phenylene diisocyanate. The situation cam be compared to excluding a compound by using product by process language.

7. Claims 7-9 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for processes wherein the potassium enolate is generated using ethanolic KOH and the precursor compounds are produced in the presence of a polar aprotic solvent, does not reasonably provide enablement for processes having improved reaction times and yielding advantages when aliphatic and difunctional nitrile oxide precursors are produced. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to use the invention commensurate in scope with these claims. Applicants have provided adequate enablement for the production of the aforementioned precursors when the aforementioned ethanolic KOH and polar aprotic solvents are utilized.

8. Claims 7-9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Within claim 7, applicants have claimed a process for the generation of a nitrile oxide compound; however, the claimed process, according to the specification, yields the nitrile oxide precursor, not the nitrile oxide compound. If applicants intend to claim a process for generating the nitrile oxide compound, then the claimed process fails to set forth necessary and defining steps of the process.

9. Claim 6 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Two of the structures are improper, because the subscript, "3", has been omitted from the methyl group.

10. Claim 10 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The language, "the polymer solution" and "the mixture", lacks antecedence.

11. Claims 10 and 13 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for polymeric systems wherein the polymer to be crosslinked contains the functional groups; alkenes, alkynes, nitriles, or isocyanates, does not reasonably provide enablement for the crosslinking of polymers that do not contain the aforementioned functional groups. The specification does not enable any person skilled in the art to which it

pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with these claims. Applicants have failed to provide adequate guidance for the reaction and crosslinking of polymers lacking the aforementioned functional groups. Other than the functional groups disclosed, one could not determine from the specification what other groups can be used to react with the nitrile oxides.

12. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless -
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

13. Claims 1 and 2 are rejected under 35 U.S.C. 102(b) as being anticipated by See et al. ('951) or Leslie-Smith et al. (Divergent Behavior in the Isocyanate-induced and Thermal Generation of Nitrile Oxides from Ethyl Nitroacetate) or Boyd et al. (The Reactions of Aliphatic Nitro Compounds: Condensations with Isocyanates) or Shimizu et al. (Synthesis of Isoxazoline-3-carboxanilides and Isoxazole-3-carboxanilides by Thermolysis of Methoxycarbonyl-nitroacetanilides in the Presence of Dipolarophiles) or Prep'yalov et al. (Reaction of 2-substituted 6-alkoxy-4H-1,3-oxazin-4-ones with some electrophilic and nucleophilic agents).

The references disclose nitrile oxide precursors which correspond to those claimed. See column 36, line 13 and compound 201 within See et al. See line 3 of page 9252 of Leslie-Smith

et al. See page 2762 of Boyd et al. See page 488 of Shimizu et al. See CAS registry number 176100-72-4 of Prep'yalov et al.

14. The references were made of record and supplied during prosecution of the parent application.

15. Claims 10 and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by Breslow ('023 or '204) or Trapasso ('161).

Patentees disclose curing unsaturated polymers using nitrile oxides, wherein the nitrile oxide precursor has been added to the uncured polymer and generated *in situ*. See abstract of Trapasso. See column 5, lines 35+ within Breslow ('023). See column 5, lines 52+ within Breslow ('204).

16. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground

provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

17. Claims 1-4 and 6 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 1 of U.S. Patent No. 6,355,838. Although the conflicting claims are not identical, they are not patentably distinct from each other because each claim set is drawn to the same compound.

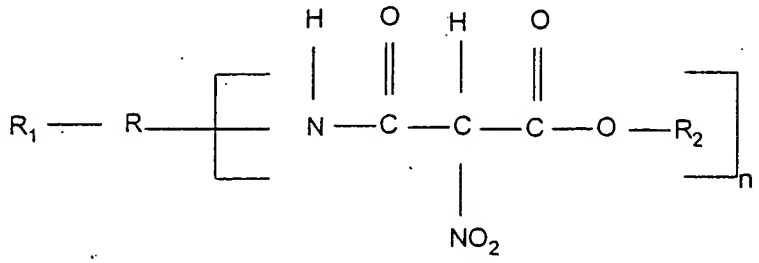
Any inquiry concerning this communication should be directed to R. Sergent at telephone number (703) 308-2982.

RABON SERGENT
PRIMARY EXAMINER

R. Sergent
June 28, 2003

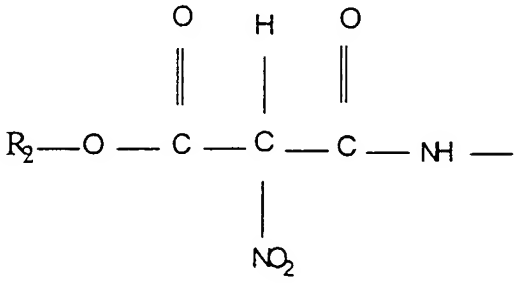
We claim:

1. A nitrile oxide precursor compound of the general formula:



Formula I

wherein R is a substituted or unsubstituted C_{1-17} alkyl, alkoxy, cycloalkyl, aromatic or diisocyanate trimer; n is 1-10; R_1 is selected from the group consisting of NCO, CN, H, SO_2Cl, COCl, $N(CH_3)_2$ $C(O)CH_3$, $C(O)OCH_3$, $C(O)OC_2H_5$, C_6H_5, an acid chloride such as $SOCl_2$, or another group with reactive functionality, or

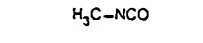


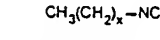
wherein R_2 is branched or unbranched alkyl with 1 to 5 carbon atoms such as ethyl, isopropyl or sec-butyl, and the like; provided that Formula I cannot be derived from p-phenylene diisocyanate.

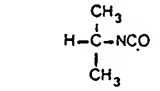
2. A nitrile oxide precursor compound according to Claim 1 wherein R may be branched or unbranched, substituted or unsubstituted with

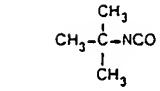
alkyl, sulfate, sulfonate, alkoxy, CN, NO_2 or an aromatic group. R may be a biphenyl group, fused rings or repeating aromatic groups.

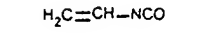
3. A nitrile oxide precursor compound according to Claim 1 wherein R is derived from an aromatic or aliphatic residue of an isocyanate, diisocyanate, polyisocyanate compound or residue of an isocyanate, diisocyanate, or polyisocyanate compound selected from the group consisting of:

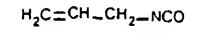


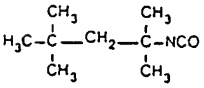


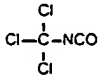


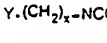


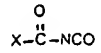


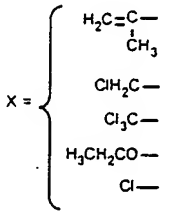


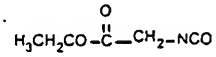


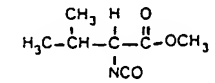


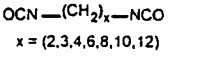


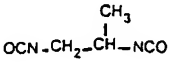


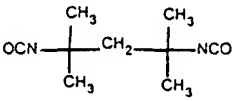


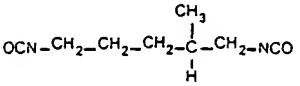


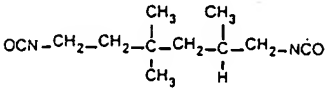


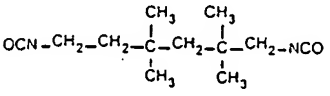












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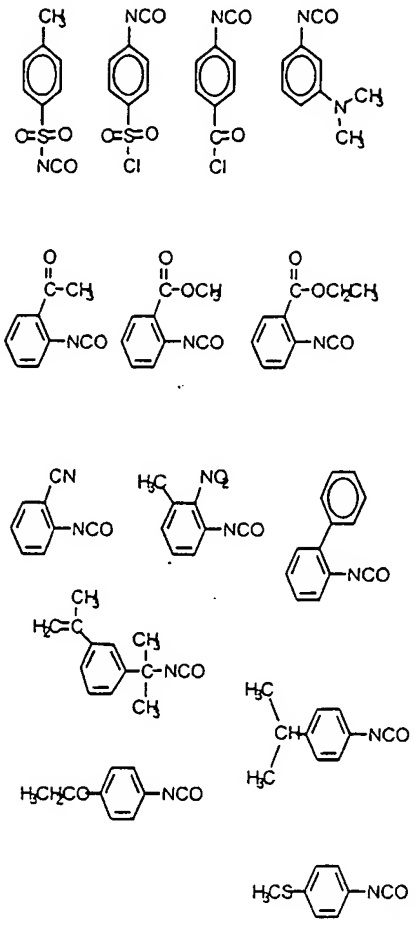
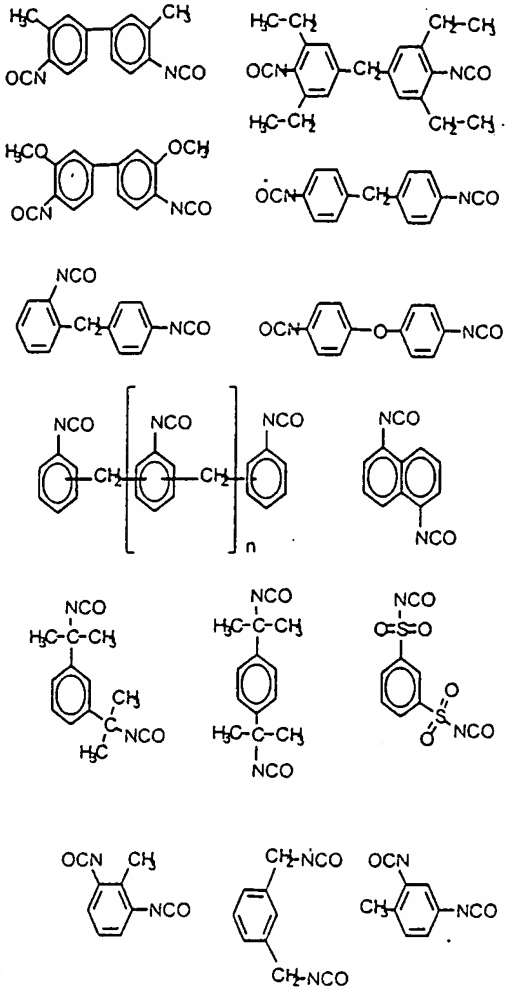
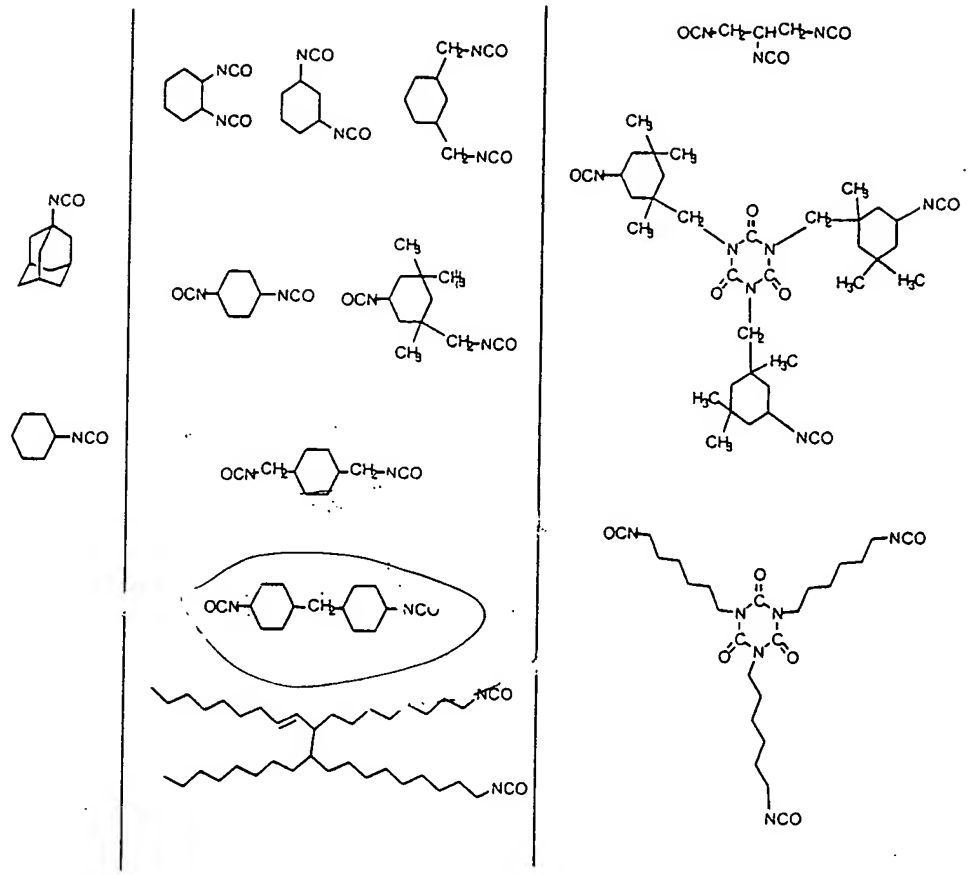
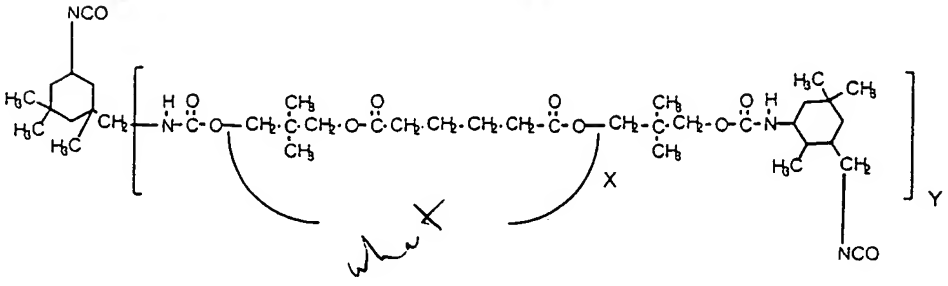








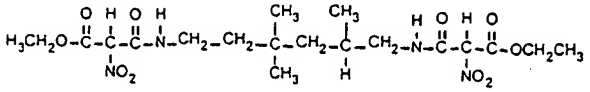
wherein in the above structures, n = 2-4, and x and y are chosen so that the molecular weight of the polyneopentyl glycol adipate diisophorone terminated isocyante structure is approximately 1350 and combinations thereof.

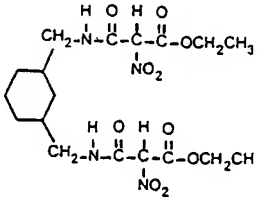
4. A nitrile oxide precursor compound according to Claim 1 wherein R is derived from an aromatic or aliphatic residue of an isocyanate or diisocyanate compound selected from the group consisting of 4,4'-

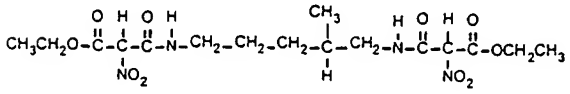
methylenebis(phenyl isocyanate) ("MDI"); DESMODUR W (hydrogenated MDI); isophorone diisocyanate ("IPDI"), 1-(1-isocyanato-1-methyl ethyl)-3-(1-methyl ethenyl)benzene("m-TMI"), isophorone triisocyanate, isophorone, tetramethylenexylenediisocyanate, ("TMXDI") and mixtures thereof.

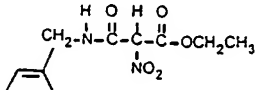
5. A nitrile oxide precursor compound according to Claim 1 wherein R is C_{3-17} alkyl.

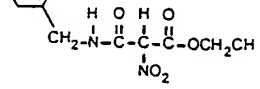
6. A nitrile oxide precursor compound selected from the group consisting of:

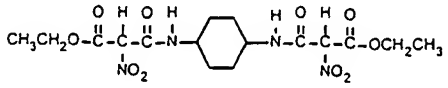


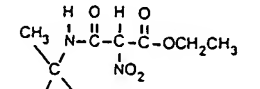


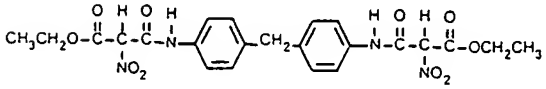


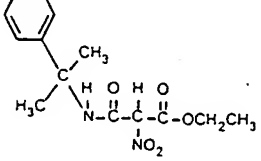












7. A process for the generation of a nitrile oxide compound comprising the steps of

a) generating a potassium enolate of ethyl nitroacetate in situ;

b) isolating said enolate; and

c) adding to said isolated enolate an isocyanate, diisocyanate or polyisocyanate, or isofunctional material.

8. The process of Claim 7 additionally comprising the step of mixing the diisocyanate with a polar solvent prior to adding the diisocyanate to the enolate.

9. The process of Claim 8 wherein the polar solvent is selected from the group consisting of diglyme, monoglyme, glyme, THF, DMF and DMSO.

10. A process for crosslinking a polymer composition comprising adding a nitrile oxide precursor to the polymer solution and heating the mixture to form a nitrile oxide in situ and subsequently crosslink.

11. A process according to Claim 10 wherein the polymer comprises one or more pendant or terminal functional groups selected from the group consisting of alkenes, alkynes, nitriles and isocyanates.

12. A urethane composition which is stable to temperatures below 120°C comprising the nitrile oxide precursor compound of Claim 1.

13. A pressure sensitive adhesive, reactive hot melt adhesive, polyurethane dispersion, thermosetting adhesive, thermoplastic adhesive or coating comprising a nitrile oxide precursor compound according to Claim 1.

14. An AB copolymer comprising a nitrile oxide precursor compound according to Claim 3, wherein A is the nitrile oxide precursor compound derived from 1-(1-isocyanato-1-methyl ethyl)-3-(1-methyl ethenyl)benzene ("m-TMI") and B is a compound with olefinic functionality.

15. A polyurethane reactive hot melt adhesive comprising a nitrile oxide precursor compound according to Claim 1.